

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
22 April 2004 (22.04.2004)

PCT

(10) International Publication Number
WO 2004/033064 A2

(51) International Patent Classification⁷:

B01D

(21) International Application Number:

PCT/US2003/032382

(22) International Filing Date: 10 October 2003 (10.10.2003)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

60/417,720

10 October 2002 (10.10.2002) US

(71) Applicant (for all designated States except US): GRACO
MINNESOTA INC. [US/US]; 60 11th Ave. N.E., Min-
neapolis, MN 55413 (US).

[US/US]; 1448 Pheasant Run, New Richmond, WI 54017
(US). THURY, Eugene [US/US]; 1206 East 6th Street,
St. Paul, MN 55106 (US). PARKHURST, Gregory
[US/US]; 9125 Hampshire Avenue North, Brooklyn Park,
MN 55445 (US). MARSHIK, Michael [US/US]; 10428
National Street, Circle Pines, MN 55014 (US).

(74) Agent: FARROW, Douglas; GRACO MINNESOTA
INC., 60 11th Ave. N.E., Minneapolis, MN 55413 (US).

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU,
AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU,
CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE,
GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR,
KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK,
MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT,
RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR,
TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

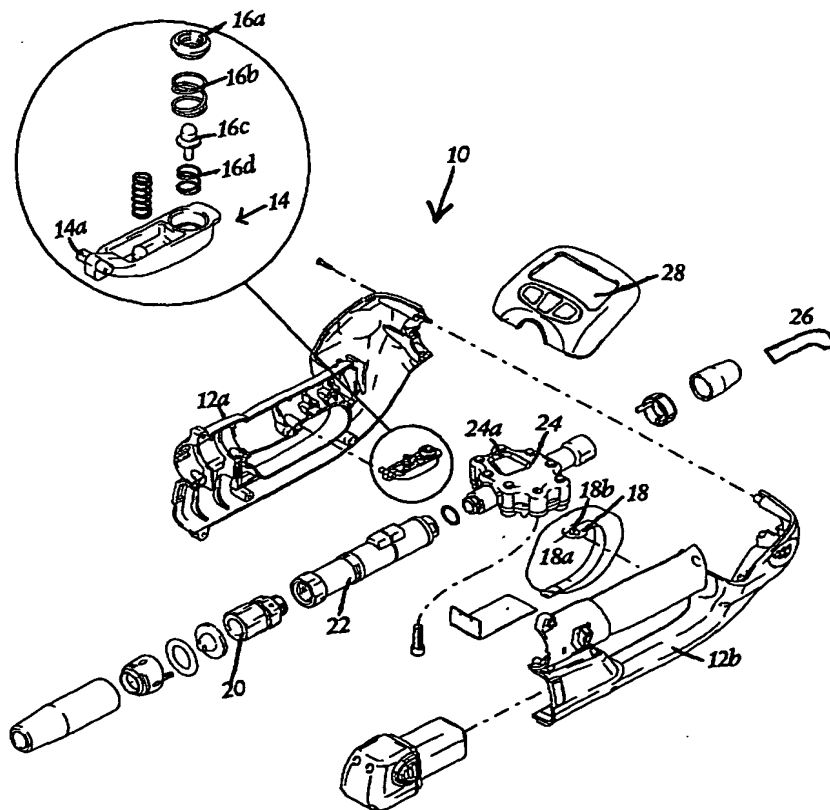
(72) Inventors; and

(75) Inventors/Applicants (for US only): KING, Mark

(84) Designated States (*regional*): ARIPO patent (GH, GM,
KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),

[Continued on next page]

(54) Title: USE OF PRESSURE SENSITIVE MEMBRANE AND SOLENOID ACTUATED VALVE FOR ELECTRONIC DIS-
PENSE CONTROL



(57) Abstract: The invention replaces mechanical actuation of the valve (22) in lubricant dispense meters (10) to provide a software driven method of controlling the dispense of fluids. The design utilizes either a pressure sensitive membrane switch or a multi-position membrane switch (18) in conjunction with either a multistage solenoid actuated valve, a proportional solenoid actuated valve or an on/off solenoid actuated valve (22) to provide operator or programmed control of lubricant dispense frequency and flow rate via the meter's microprocessor.